

## A REVISION OF *THAMINOPHYLLUM* HARV. (ASTERACEAE— ANTHEMIDEAE)

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### ABSTRACT

A revision of *Thaminophyllum* has been undertaken; three species are recognised. A key to the species is provided and a distribution map for each species is given.

### UITTREKSEL

'N HERSIENING VAN *THAMINOPHYLLUM* HARV. (ASTERACEAE—  
ANTHEMIDEAE)

Die geslag *Thaminophyllum* is hersien en 3 soorte erken. 'n Sleutel tot die soorte en verspreidingskaarte vir elke soort word aangebied.

### INTRODUCTION

*Thaminophyllum*, comprising three species, is a genus of small, branching, aromatic shrublets, endemic to the south-western Cape. The original description of the genus was given by W. H. Harvey in Harvey and Sonder's *Flora Capensis* 3: 155 (1865). Two species were described. A third species has since been discovered and is described in this study.

### DERIVATION OF NAME

*Thaminophyllum* is derived from the Greek *θαμινος* (crowded or close-set) and *φυλλον* (leaf).

### RELATIONSHIP WITH OTHER GENERA

The genus was placed in the tribe Anthemideae by Harvey (l.c.). With this I concur. The aromatic scent, pluriseriate involucre, truncate style-branches and the absence of a pappus, agree with the characters of the tribe. If the artificial division of Anthemideae into 2 sub-tribes, Anthemidinae and Chrysanthemidinae (Hoffmann 1891:268) be accepted, *Thaminophyllum* would fall into the latter on account of the epaleate receptacle. There is a strong vegetative resemblance to *Eriocephalus*, but there are important differences in the floral parts, namely in the absence of paleae on the receptacle, the sterile ray-florets and fertile disc-florets. There is also a difference in the chromosome number (Goldblatt, 1980).

Floral morphology links *Thaminophyllum* most closely with *Lidbeckia* and chemotaxonomy bears out the relationship (Bohlmann and Zdero, 1974). But

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*Lidbeckia* differs in having petiolate and lobed leaves and capitula borne on long peduncles. Unfortunately no chromosome count has yet been made of *Lidbeckia*.

*Inezia* is another related genus and it has the same  $n = 10$  chromosome number as *Thaminophyllum*. The yellow colour of the rays and the fact that they are fertile would seem to separate them, as well as the geographical separation. *Inezia* occurs approximately 1 600 km to the north of Cape Town.

There is a chemical alliance between *Peyrousea* and *Thaminophyllum* (Bohlmann & Zdero, 1974) and also a distinct vegetative resemblance. Unfortunately there is no chromosome count as yet. The main difference lies in the absence of ray-florets in *Peyrousea*.

From *Phymaspermum* (especially *P. leptophyllum* DC.) it differs in having sterile ray-florets, achenes without ribs, hairy leaves and disc-florets with 4-lobed limb. There is also a superficial resemblance to *Cymbopappus* (especially *C. adenosolen* (Harv.) B. Nord.). However, *Thaminophyllum* differs in having sterile ray-florets, no pappus, entire leaves and different cypselas.

#### A REVISION OF *THAMINOPHYLLUM*

***Thaminophyllum*** Harvey in *Flora Capensis* 3: 155 (1865); Benth & Hook., *Genera Plantarum* ii: 423 (1873); Phill. in *Genera of S. African Pl.* 824 (1951); Dyer in *Genera of S. African Pl.* 1: 705 (1975).

*Type species* : *T. multiflorum* Harv.

Small, branching shrublets. *Leaves* aromatic, ericoid, alternate, sessile, with pilose or silky pubescence. *Peduncles* solitary or in leafy cymes towards the ends of branches. *Capitula* heterogamous. *Involucre* campanulate or ovoid. *Involucral bracts* 2–3 seriate, silky-pubescent or pilose, apically somewhat purple in colour. *Receptacle* epaleate, pubescent or pilose, convex or conical. *Ray-florets* 2–11, ligulate, white or pink, sterile, with cylindric tube and elliptic or obovate lamina 2–3 times as long as the tube; style undivided, not much exerted; pappus 0. *Disc-florets* 10–60, yellow, bisexual, corolla-tube somewhat compressed, resin-dotted, with acute or rounded lobes; anthers 4, obtuse at base, with apical, oblong sterile appendages; style sub-terete with linear, truncate branches, bristle-tipped; achenes (immature) oblong, sub-angled, glabrous, crowned with a hardened conical or globose stylopodium; pappus 0.

Chromosome numbers:  $2n = 20$  (Goldblatt, 1980)

#### DISTRIBUTION

All three species occur in fynbos in the winter rainfall area in relatively cool, moist mesic situations, on the Hottentots Holland and neighbouring mountains of the south western Cape.

*T. mundii* and *T. latifolium* have both been found near sea level with upper altitudes of 830 m for the former and 290 m for the latter. *T. multiflorum* has been collected at altitudes ranging from 250 m to 800 m.

In *Flora Capensis* and in Hutchinson's *A Botanist in Southern Africa* (1946–62) the additional localities of George and Pietermeintjies (Pietermeintjies) are cited. Harvey cites *T. multiflorum* as having been collected in the district of George by Alexander Prior. However, the sheet in the Kew Herbarium bears a tag on which is printed, "Hott. Holl.". Dr Hutchinson's record from Pietermeintjies (vide *A Botanist in Southern Africa*) or "between Matjesfontein and Karroopoort" on his collecting label, is almost certainly an error. M. E. Kensit's specimen of *T. latifolium* in the Bolus Herbarium (without number) is said to come from Uitenhage. It is not possible to state categorically that this is incorrect as I have not undertaken an exhaustive search in the area. But until such time as it may again be collected in that locality, the record is suspect. R. Schlechter's specimen of *T. mundii* (*T. 'pauciflorum'*) from the Caledon Zwartberg, dates from 1894 and the species has not been collected again on that mountain. There is every likelihood that a more extensive search will bring it to light.

#### KEY TO THE SPECIES

- (a) Leaves > 1.5 mm wide, verrucose when dry; lobes of the disc-florets obtuse ..... 1. ***T. latifolium***  
 Leaves < 1.5 mm wide, not verrucose when dry; lobes of the disc-florets acute ... (b)  
 (b) Ray-florets 7–11; involucre campanulate  $\pm$  10 mm wide ..... 2. ***T. multiflorum***  
 Ray-florets 2–4; involucre ovoid-oblong  $\pm$  4 mm wide ..... 3. ***T. mundii***

#### 1. *Thaminophyllum latifolium* Bond, sp. nov.

*Type:* Fernkloof Nature Reserve, Hermanus, south-facing stony slope, 21/10/1974, *E. R. Orchard* 270 (NBG, holo.; BOL, G, K, L, M, MO, PRE, S, STE, iso.).

Differt a *T. multiflorum* et *T. mundii* foliis latioribus viridis, lobi floribus disci obtusi.

Branched suffrutex to 750 mm. Lower stems leafless, upper leafy, silky-pilose. Stems terminate in a solitary capitulum but two buds remain dormant below and may develop later. *Leaves* alternate, sessile, spreading, lanceolate 0.7–10 mm long, 1.5–3 mm wide, somewhat convex with recurved margins, apex with acute, glabrous callus. Upper surface silky-pilose, becoming glabrescent, verrucose when dry, lower surface densely silky-pubescent. *Peduncle* 10–30 mm long, silvery-pilose. *Involucre* campanulate, 4–7 mm long, 6–10 mm wide; involucre bracts 3-seriate, silvery-pilose, inner with hairy, purplish apices. *Receptacle* narrowly conical, pilose. *Ray-florets* 6–11, sterile; tube 4–5 mm long, whitish; lamina 6–7 mm long, 3–4 mm wide, rotund, emarginate, resin-dotted and veined, white or pink above, pinky-purple below; style undivided, ovary filiform; pappus 0. *Disc-florets* c. 40–50, bisexual; corolla ampullaceous, yellow, resin-dotted,

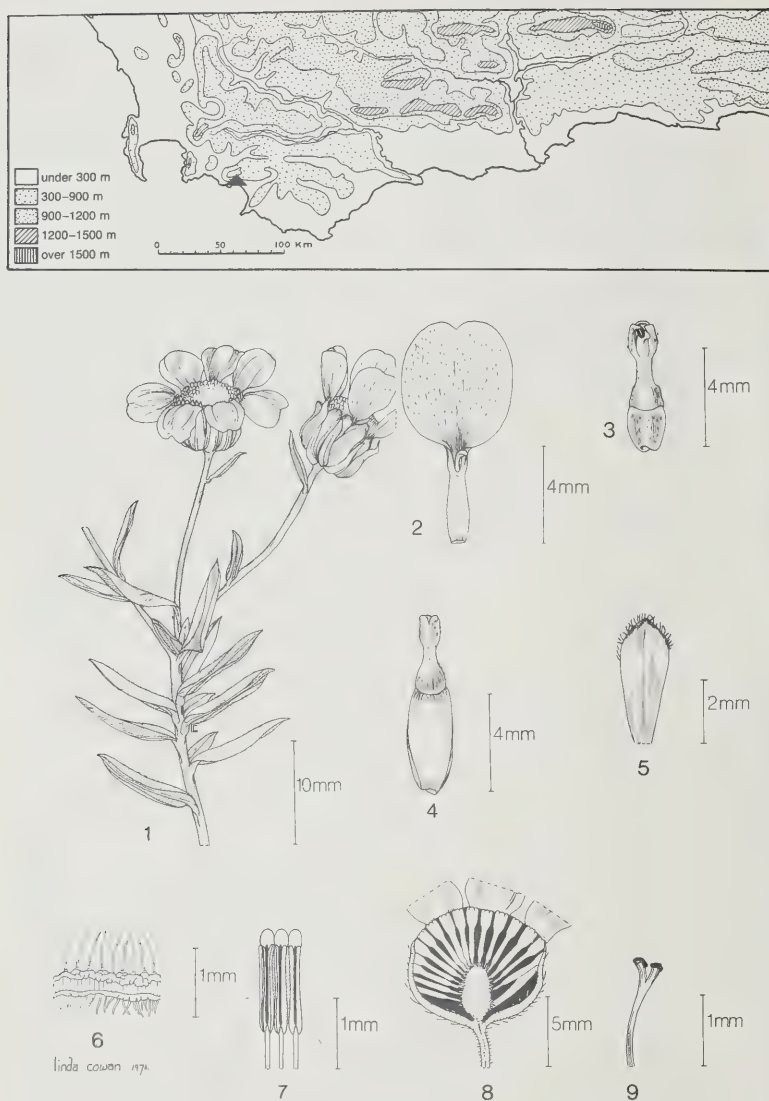


FIG. 1.

*Thaminophyllum latifolium* Bond. (1) Flowering shoot; (2) ray-floret; (3) disc-floret; (4) disc-floret, later stage; (5) inner bract; (6) cross-section of leaf; (7) anthers; (8) vertical section through capitulum (stylised); (9) upper portion of style and stigma. (From Orchard 270). Distribution map above.

3.25–4 mm long; lobes 4, oblong, obtuse, dark-edged; anthers 1.5 mm long or less, including the rounded apical appendage; style hardly exerted, terete with swollen base, style-branches darker, truncate, stigmatic surface bristly; cypselas elliptic, 2–2.50 mm long, 1–1.25 mm wide, light brown, furnished with a cream-coloured stylopodium; pappus 0.

Flowering period: August–December.

Distribution: *T. latifolium* is found on south-facing rocky slopes or along streamsides on the Klein River Mountains, Hermanus.

Diagnostic characters: The broad pink or white rays and broader, greener leaves make this an easily recognised species.

#### SPECIMENS EXAMINED

CAPE—3419 (Caledon): Fernkloof Nature Reserve, Hermanus (-AD), Oct., Orchard 270 (NBG, holo.; BOL, G, K, L, M, MO, PRE, S, STE, iso.); above Voëlkliip, Sept., *Esterhuysen 33604* (BOL, K, MO, PRE, STE); Hermanus, Nov., *Rogers 26534* (BOL, PRE); Vogelgat Nature Reserve, August, *Williams 2551* (K, MO, NBG, PRE); Hermanus, Nov., *Hayes Palmer* (NBG 28422) (NBG); Hermanus, Sept., *Esterhuysen 33616* (BOL); the mountain above Hermanus, Nov., *Nordenstam & Lundgren 2254* (NBG, S); Voëlkliip above 8th Avenue, Nov., *Bond 1697* (NBG).

#### 2. *T. multiflorum* Harvey in Fl. Cap. 3: 155 (1865).

Type: Cape: no precise locality, *G. Thom 834* (K!; NBG, photo.).

Branched suffrutex to 600 mm. Lower stems leafless, upper densely leafy and silky—pubescent. Stems terminate in a solitary capitulum but two buds remain dormant below and may develop later. *Leaves* alternate, sessile, ascending, somewhat incurved, linear-lanceolate, 0.9–1.2 mm long, 1 mm wide, margins becoming revolute, apex acute, midrib raised below. Both surfaces densely silky-pubescent. *Involucre* campanulate, 5–8 mm long, 9–11 mm wide; involucre bracts 3-seriate, silky-pubescent, outer shorter, inner with hairy, purple apices. *Receptacle* conical, pubescent. *Ray-florets* (7) 8–9 (10) sterile; tube 2–3 mm long, pale green, transparent, resin-dotted; lamina 5–7 mm long, 1.75–3 mm wide, obovate, emarginate or rounded, resin-dotted, white, faintly veined; style undivided; ovary elliptic; pappus 0. *Disc-florets* c. 50–60, bisexual; corolla tubular, yellow, resin-dotted, 1.5–2 mm long, lobes 4, acute, cucullate; anthers 1.25 mm long, including the rounded apical appendage; style terete with swollen base, style-branches truncate, stigmatic surface bristly; cypselas narrowly elliptic-oblong, somewhat four-edged, furnished with a yellowish stylopodium; pappus 0.

Flowering period: September–January.

Distribution: *T. multiflorum* appears to have a rather localised distribution, usually on south-west facing slopes of mountains in the Grabouw–Houw Hoek area.



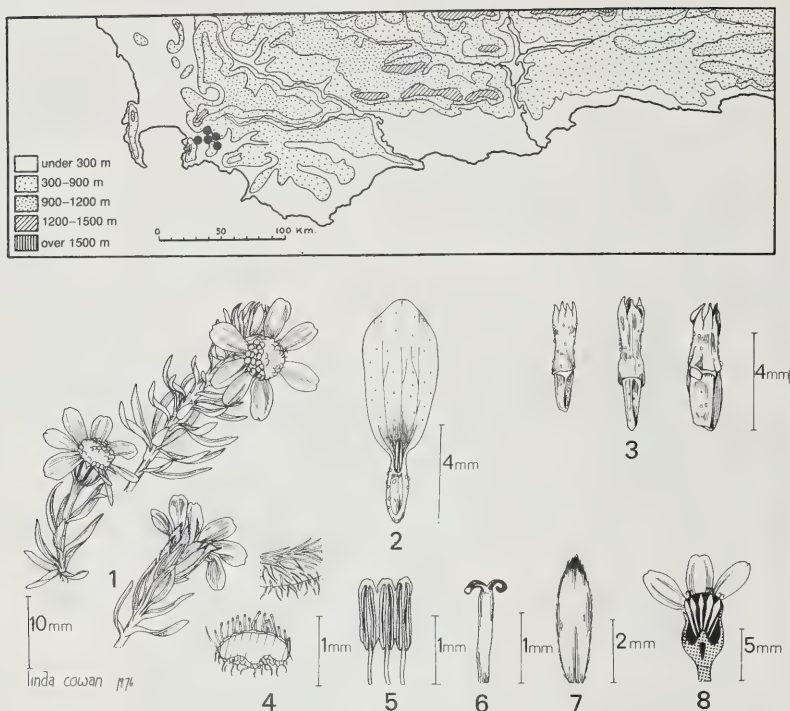


FIG. 2.

*Thaminophyllum multiflorum* Harv. (1) Flowering shoots; (2) ray-floret; (3) disc-florets at varying stages; (4) lower surface and cross-section of leaf; (5) anthers; (6) upper portion of style and stigma; (7) inner bract; (8) vertical section through capitulum (stylised). (From Bond 1673). Distribution map above.

Diagnostic characters: This species differs from *T. mundii* in the greater number of ray-florets (7–10), and the solitary capitula. It differs from *T. latifolium* in the narrower more silvery leaves and the narrower more constantly white ray-florets.

#### SPECIMENS EXAMINED

CAPE—3419 (Caledon): In clivis montis pone Houw Hoek (-AA), Oct., *H. Bolus* 359 (BOL, PRE, SAM); Houw Hoek, Jan., *H. Bolus* 4684 (SAM); in clivis montis pone Houw Hoek, Oct., *H. Bolus* Herb. Norm. 359 (BOL, PRE, SAM); Elgin, Sept., *L. Bolus* s.n. (BOL); Houw Hoek Forestry Reserve, Aug., *P. Bond* 1673 (NBG, PRE); near Palmietriver north of Viljoenspas, Sept., *K. Bremer* 121 (NBG, S); Aries Kraal, hill top, Nov., *R. H. Compton* 16500 (NBG); Mt.

Lebanon, above De Rust, Oct., *E. Esterhuysen* 33257 (BOL); Houw Hoek, Sept., *E. Esterhuysen* 31109 (BOL); Houw Hoek Mountain, Sept., *E. Esterhuysen* 32657 (BOL); Mountain Houw Hoek, Nov., *E. E. Galpin* 4175 (PRE); Viljoen's Pass, Sept., *U. C. Gillett* 4457 (BOL, GRA, PRE); Houw Hoek Mountain, Nov., *P. Goldblatt* 3294 (MO, NBG); Houw Hoek, Sept., *P. Goldblatt* 4982 (MO, NBG, PRE, S); Houw Hoek, July, *F. Guthrie* s.n. (NBG 28421); Lebanon State Forest, Oct., *R. A. Haynes* 717 (MO, NBG, PRE, STE); halfway up slope between Weir I and ridge, Lebanon, July, *F. J. Kruger* KR 98 (PRE); Aries Kraal, Nov., *F. M. Leighton* 765 (BOL, PRE); slopes of Groenland Mountains, above Lebanon Forest Reserve, Sept., *G. J. Lewis* s.n. (SAM 67567); in montibus pr. Houw Hoek, Oct., *P. MacOwan* 2953 (SAM); Houw Hoek Peak, Nov., *B. Nordenstam & J. Lundgren* 2191 (NBG, S); Mts round Houw Hoek, Oct. *E. P. Phillips* 56 (NBG); Viljoenspas, Sept., *S. Rehm* s.n. (STE 26530); Houw Hoek's Berg, Oct., *R. Schlechter* 5455 (BOL, GRA, PRE); Jakkalsrivier Experimental Catchment, Oct., *R. D. Smith* 28 (STE); Viljoenspass, Sept., *R. G. Strey* 743 (PRE); Palmiet River, Elgin, Dec., *T. P. Stokoe* s.n. (SAM 57027); Grabouw, foothills of Palmiet River Mtns, Oct., *T. P. Stokoe* s.n. (SAM 62025) (PRE, SAM, STE); Palmiet River, Elgin, Dec., *T. P. Stokoe* 8151 (BOL); without locality, *G. Thom* 834 (K).

Dubious localities: In provincia George, *Alexander Prior* s.n. (K, SAM). Although the SAM sheet bears a ticket in Pappe's handwriting recording the above locality, on the K sheet there is a tag on which is printed "Hott. Holl.", a far more likely locality.

As mentioned in the introduction, the locality "Between Matjesfontein and Karroo Poort" is almost certainly an error, for *J. Hutchinson* 445 (BOL, GRA, PRE).

The epithet "multiflorum" refers to the number of disc-florets in each capitulum and not to the number of capitula in the inflorescence.

3. **T. mundii** Harvey in Fl. Cap. 3: 155 (1865). Type: Cape: no precise locality, *Mund* (K!, NBG, photo.).

Much-branched suffrutex c. 450 mm high. Lower stems leafless, upper densely leafy, silky-pubescent with occasional long silky hairs. Stems terminate in a capitulum below which are c. 6–8 short leafy lateral branchlets, each ending in 1 or, rarely, 2 capitula. Leaves alternate, sessile, spreading, slightly twisted, linear-lanceolate, 7–8 mm long, 1 mm wide, margins revolute, apex acute, midrib raised below. Both surfaces densely silky-pubescent. *Involucre* ovoid-oblong, 4–5 mm long, 2–3 mm wide; involucre bracts 2–3 seriate, silky-pubescent, outer shorter, inner with hairy purplish apices. *Receptacle* slightly convex, pubescent. *Ray-florets* (2)3(4), sterile; tube 2–3 mm long, pale green, resin-dotted; lamina 5–7 mm long, 2–3 mm wide, elliptic, retuse or rounded, resin-dotted, white, veined; style undivided; ovary filiform; pappus 0. *Disc-florets* (11) 13–14 (–19), bisexual; corolla tubular, yellow, resin-dotted, 4–5 mm long; lobes 4, acute, cucullate;

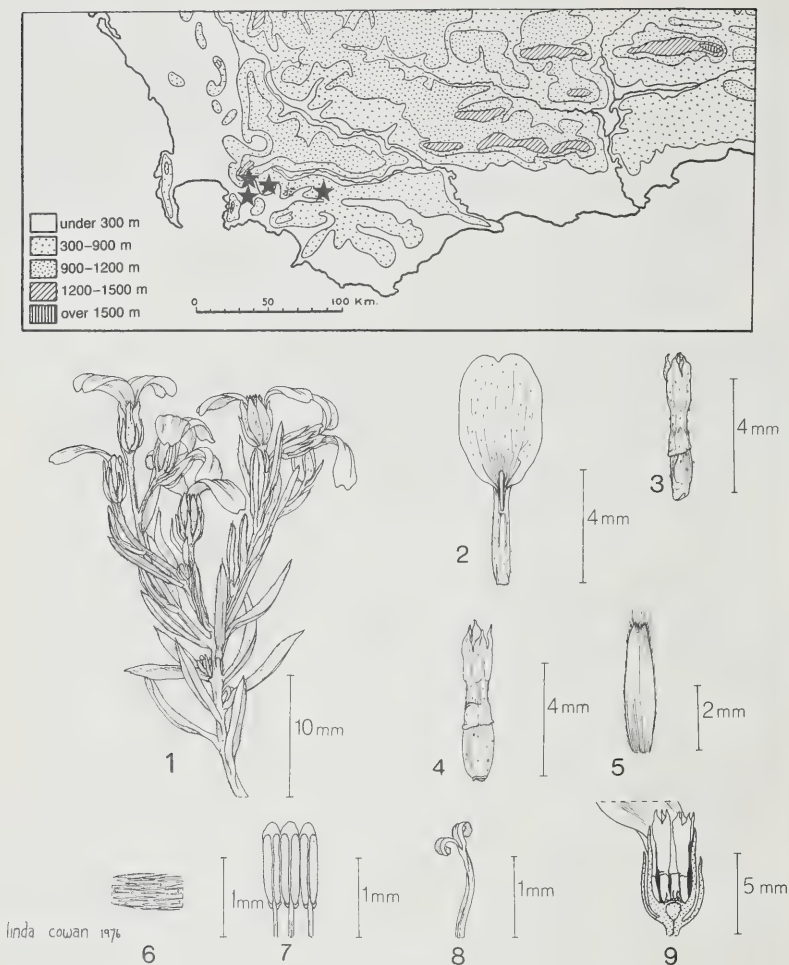
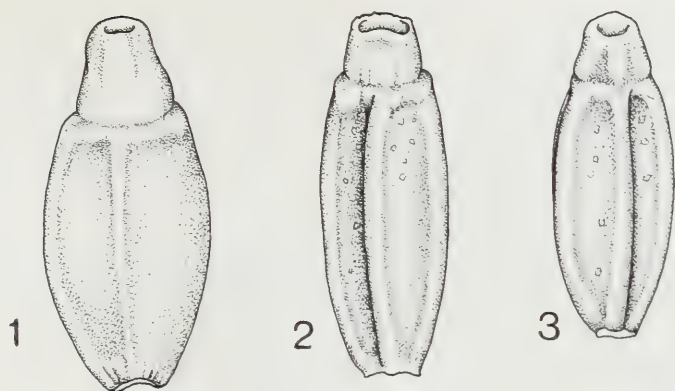


FIG. 3.

*Thaminophyllum mundii* Harv. (1) Flowering shoot; (2) ray-floret; (3) disc-floret; (4) disc-floret, later stage; (5) inner bract; (6) lower surface of leaf; (7) anthers; (8) upper portion of style and stigma; (9) vertical section through capitulum (stylised). (From Middlemost 1923). Distribution map above.





*Linda Cowan*

FIG. 4.

Cypselas of (1) *T. latifolium* (2) *T. multiflorum* and (3) *T. mundii*  $\times 15$ .

anthers 4, 1–1.25 mm long, including the rounded apical appendage; style terete with swollen base, style-branches truncate, stigmatic surface bristly; cypselas oblong, somewhat angled, furnished with a yellowing collar surrounding the stylopodium; pappus 0.

Flowering period: July–November.

Distribution: *T. mundii* occurs in several isolated areas in the Houw Hoek–Elgin mountains and in mountains above Caledon.

Diagnostic characters: This species differs from the other two species in having very few ray-florets (2–4) and in the relative massing of capitula.

#### SPECIMENS EXAMINED

CAPE—3419 (Caledon): In collibus prope Houw Hoek (-AA), July, *H. Bolus* Herb. No. 384 (BOL, GRA, K, PRE, SAM); in montibus prope Houw Hoek, July, *H. Bolus* 5442 (BOL, K, MO, PRE); in rupestribus montium circa Houw Hoek, July, *P. MacOwan* 2952 (SAM); Highlands, Elgin, Nov., *A. J. Middlemost* 1923 (BOL, NBG, PRE); Zwarteberg (-AB), Oct., *R. Schlechter* 5595 (BOL, GRA, PRE); Caledon Wild Flower Show, Sept., *P. Bond* 1690 (NBG, PRE); Highlands Forest Reserve (-AC), Oct., *B. Downing* 379 (STE); Aug., *P. Bond* 1700 (NBG); lower area of Highlands Forest Reserve, Aug., *P. Goldblatt* 4771 (K, MO, NBG, PRE, S, US, WAG).

Locality unknown: *Mund* s.n. (K).

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